

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

**Amendment of Part 15 to
Allow Operation in the
95-1,000 GHz Band**

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RM/Docket No. _____

To the Commission:

PETITION FOR RULEMAKING

COMES NOW the undersigned petitioner, James Edwin Whedbee, who pursuant to Section 1.405 of the Commission's rules and regulations (47 C.F.R. §1.405) hereby respectfully requests, at the earliest practical date, that the Commission issue its Notice of Proposed Rulemaking (NPRM) looking toward amending Part 15 of the Commission's rules, as set forth in the attached Appendix, to create a rule for operation of unlicensed intentional radiator devices in the 95 to 1,000 GHz band. To the extent anything herein is an informal request for Commission action, pursuant to Section 1.41 of the Commission's rules and regulations (47 C.F.R. §1.41), the undersigned Petitioner requests the Commission treat it as if formally submitted as if and as this Petition for Rulemaking. As good cause therefor, the Petitioner states as follows.

[1] IEEE-USA, in ET Docket No. 13-259, asserts that technological developments on frequencies above 95 GHz are stalled for want of service regulations permitting licensing.

[2] The Commission has identified a need for greater frequency allocations for wireless broadband service in numerous other proceedings.

[3] Petitioner states that the proposed rule is identical in most respects to those used for

other millimeter wave EHF bands in Part 15, including for spurious emissions and spectral purity. The proposed rule protects radio astronomy, space research, and earth-exploration satellite services by requiring operations which might impact those services above 275 GHz to be conducted indoors.

[4] Assuming the position of the Commission, as stated in paragraph (2) above, is correct, and further, assuming that IEEE-USA's positions in ET Docket No. 13-259 are correct, the Petitioner asserts that licensing of transmissions in the 95-1,000 GHz band may hinder technological developments which this proposed rule permits without licensing. Therefore, the proposed rule is in the public interest, convenience, and necessity.

WHEREFORE, the foregoing considered, the undersigned Petitioner respectfully requests the Commission issue its NPRM including the elements proposed herein and appended hereto.

Respectfully Submitted:



November 5, 2013

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Petitioner

APPENDIX

1. Part 15 is amended to add a new section as follows...

“§15.261 Operation within the band 95-1,000 GHz.

(a) Operation under the provisions of this section is not permitted for the following products:

(1) Equipment used on aircraft or satellites.

(2) Field disturbance sensors, including vehicle radar systems, unless the field disturbance sensors are employed for fixed operation. For the purposes of this section, the reference to fixed operation includes field disturbance sensors installed in fixed equipment, even if the sensor itself moves within the equipment.

(b) Within the 95-1,000 GHz band, emission levels shall not exceed the following equivalent isotropically radiated power (EIRP):

(1) Products other than fixed field disturbance sensors shall comply with one of the following emission limits, as measured during the transmit interval:

(i) Except as indicated in paragraph (b)(1)(ii) of this section, the average power of any emission shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm.

(ii) For transmitters located outdoors, the average power of any emission shall not exceed 82 dBm minus 2 dB for every dB that the antenna gain is less than 51 dBi. The peak power of any emission shall not exceed 85 dBm minus 2 dB for every dB that the antenna gain is less than 51 dBi. The provisions of §15.204(c)(2) and (c)(4) of this part that permit the use of different antennas of the same type and of equal or less directional gain do not apply to intentional radiator systems operating under this provision. In lieu thereof, intentional radiator systems shall be certified using the specific antenna(s) with which the system will be marketed and operated. Compliance testing shall be performed using the highest gain and the lowest gain antennas for which certification is sought and with the intentional radiator operated at its maximum available output power level. The responsible party, as defined in §2.909 of this chapter, shall supply a list of acceptable antennas with the application for certification.

(iii) Transmitters operating below 275 GHz shall occupy a bandwidth of 500 MHz or less.

(2) For fixed field disturbance sensors that occupy 500 MHz or less of bandwidth, the average power of any emission, measured during the transmit interval, shall not exceed 40 dBm, and the peak power of any emission shall not exceed 43 dBm. In addition, the average power of any emission outside of the 95-1,000 GHz band shall not exceed 10 dBm, and the peak power of any emission shall not exceed 13 dBm.

(3) For fixed field disturbance sensors other than those operating under the provisions of paragraph (b)(2) of this section, the peak transmitter conducted output power shall not exceed -10 dBm and the peak EIRP level shall not exceed 10 dBm.

(4) The peak power shall be measured with an RF detector that has a detection bandwidth within the applicable portion of the 95-1,000 GHz band for which the transmitter is being operated and has a video bandwidth of at least 10 MHz. The average emission levels shall be calculated based on the measured peak levels, over the actual time period during which transmission occurs. Measurement procedures that have been found to be acceptable to the Commission in accordance with §2.947 of this

chapter may be used to demonstrate compliance.

(c) Limits on spurious emissions:

(1) The power density of any emissions outside the 95-1,000 GHz band shall consist solely of spurious emissions.

(2) Radiated emissions below 40 GHz shall not exceed the general limits in §15.209.

(3) Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90 pW/cm² at a distance of 3 meters.

(4) The levels of the spurious emissions shall not exceed the level of the fundamental emission.

(d) Except as specified paragraph (d)(1) of this section, the peak transmitter conducted output power shall not exceed 500 mW. Depending on the gain of the antenna, it may be necessary to operate the intentional radiator using a lower peak transmitter output power in order to comply with the EIRP limits specified in paragraph (b) of this section.

(1) Transmitters with an emission bandwidth of less than 100 MHz must limit their peak transmitter conducted output power to the product of 500 mW times their emission bandwidth divided by 100 MHz. For the purposes of this paragraph, emission bandwidth is defined as the instantaneous frequency range occupied by a steady state radiated signal with modulation, outside which the radiated power spectral density never exceeds 6 dB below the maximum radiated power spectral density in the band, as measured with a 100 kHz resolution bandwidth spectrum analyzer. The center frequency must be stationary during the measurement interval, even if not stationary during normal operation (e.g., for frequency hopping devices).

(2) The peak power shall be measured with an RF detector that has a detection bandwidth within the applicable portion of the 95-1,000 GHz band for which the transmitter is being operated and has a video bandwidth of at least 10 MHz. Measurement procedures that have been found to be acceptable to the Commission in accordance with §2.947 of this chapter may be used to demonstrate compliance.

(3) For purposes of demonstrating compliance with this paragraph, corrections to the transmitter conducted output power may be made due to the antenna and circuit loss.

(e) Frequency stability. Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

(f) Regardless of the power density levels permitted under this section, devices operating under the provisions of this section are subject to the radiofrequency radiation exposure requirements specified in §§1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(g) Any transmitter that has received the necessary FCC equipment authorization under the rules of this chapter may be mounted in a group installation for simultaneous operation with one or more other transmitter(s) that have received the necessary FCC equipment authorization, without any additional equipment authorization. However, no transmitter operating under the provisions of this section may be equipped with external phase-locking inputs that permit beam-forming arrays to be realized.

(h) Any transmitter exceeding the limits in paragraphs (a)-(g) of this section may be experimentally licensed in accordance with Part 5 or operated in accordance with Part 97 of this Chapter.

(i) Operation of transmitters pursuant to this section is limited to indoor operation only if it operates within the following bands. Manufacturers of transmitters operating within these frequencies shall include a conspicuous notice to consumers stating that their transmitter(s) must be operated indoors only and that transmitters must not be deliberately pointed toward outdoor windows.

—Radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

—Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.”